



Department of Pesticide Regulation



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MEMORANDUM

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SUBJECT: Exposure Of Children To Interior Plantscapes Treated With Bifenazate At Shopping Malls

The following exposure assessment is performed to address the issue whether (further) chemical- and use-specific studies are required to support the use of bifenazate as the active ingredient (AI) on interior plantscapes grown in shopping malls or similar places. A review of the product label (U.S. EPA Registration No. 400-481-AA) further supports the conclusion that post-application and handler exposures would be negligible from this type of interiorscape use. It should be noted that the following assessment does not address the concerns about exposures from other label uses.

For children in shopping malls or in a similar setting, the reentry (post-application) exposure is considered negligible, mainly due to the assumption that by practice the reentry interval is at least 1 or 2 days long and children typically do not play with or around the plant beds for a long enough time. According to the label, this miticide is strictly for use on plants (in various agricultural and nonagricultural settings) and is not volatile. Thus, the surrounding area in shopping malls that is contaminated through fallout is expected to be very minimal.

For a two- or three-year old child, the absorbed daily dosage (ADD) from dermal (hand) contact with surface residues is likely *below* our guideline default insignificant level of 0.3 $\mu\text{g}/\text{kg}/\text{day}$ (Donahue, 1996). Based on the dislodgeable foliar residue (DFR) data submitted by the registrant (Korpalski, 1999), the DFR or surface residues at or after day 1 post-application would be $\leq 0.1 \mu\text{g}/\text{cm}^2 (= 92.9 \mu\text{g}/\text{ft}^2)$. This residue level was estimated with data from 3 greenhouse applications made at the suggested coverage rate of 0.1 fl. oz AI per 1,000 ft^2 . It can be further assumed that the contaminated surface area which children of this age group will have *actual* access to is less than 6 ft^2 (e.g., 2 yards x 1 ft). The ADD for children of this age group hence at most would be $0.28 \mu\text{g}/\text{kg}/\text{day} = [(93 \mu\text{g}/\text{ft}^2 \text{ DFR}) \times (< 6 \text{ ft}^2 \text{ play area contaminated with bifenazate}) \times (< 3\% \text{ onto hands per 30 minute playtime}) \times (< 20\% \text{ for 2 fingers into the mouth})] \times (\geq 12 \text{ kg default median body weight})^{-1}$.

Note that in the above estimation, the loading rate of 3% might be too high for a 30 minute play time, since plants in general often do not provide a true planar surface for full reach/contact. Also, children are either sucking their fingers or playing, but not doing both activities at the same time during any time interval. If hand-to-mouth is not the route of concern, then exposure from dermal (hand) contact alone will be lower by approximately an order of magnitude due to the short exposure duration involved, especially when the loaded residues might not stay on the hands long enough to be absorbed at the default *daily* rate of 50%. That is, the hands would



touch some other stuff during the rest of the day; and thus much of the bifenazate residues loaded onto the hands would soon be rubbed off before they could be available for dermal absorption. (Note that the ADD from hand contact alone is considered negligible compared to that from hand-to-mouth simply because in the above calculation algorithm, the factor of < 20% for two fingers into the mouth is replaced by the factor of < 2% for the default daily absorption rate of 50% and for a total absorption period presumably lasting 1 to 2 hours.)

The assumption that only 3% of the surface residues is dislodgeable and would load onto the child's hands is based in part on the activity involved, and in part on the duration anticipated. It is even questionable if the parent would allow the kid to constantly touch the treated plant or to constantly rub his or her hands on the nearby contaminated bench, etc. Otherwise, for playing on a treated carpet, U.S. EPA at one time or another assumed up to 10% (depending on the carpet or the floor material involved) of the available surface residues as the rate of loading by the *entire body* surface (though presumably still predominately by the hand) for events lasting 2 hours or longer. This assessment assumes that it is also unlikely that shoppers would sit on a bench right next to a plant bed long enough to allow their kids to have actual constant contact with treated (plant) surface for longer than a total duration of 30 minutes.

Furthermore, it is assumed that children older than two or three years old and adults are expected to have little or no interest in constantly touching (or playing with) decorative plants in shopping malls. Children younger than two years old are assumed to have less access to the plants due to their own and the plant's height, or to their immobility without the help of an adult. Worker exposure is also expected to be negligible, since at best this type of application is for spot treatments where extensive spraying to any given plant bed for a long enough period is not anticipated.

References

Donahue JM, 1996. Parameters Defining Insignificant Exposure. HSM-96006. Worker Health and Safety Branch, Cal/EPA Department of Pesticide Regulation, dated January 26.

Korpalski SJ, 1999. Floramite 50WP on *Spatiphyllum*: Dislodgeable Foliar Residue Study. Cal/EPA Department of Pesticide Regulation Registration No. 52750-082.